INDEX TO VOL. LXXX. (A)

Abney (Sir W. de W.) The Action of Ozone on Water-colour Pigments, 146.
Address of the President, Lord Rayleigh, November 30, 1907, 239.
Air, determination of coefficient of viscosity of (Grindley and Gibson), 114.
Alloys, interaction of mercury with certain (Mallet), 83.
Alternate current measurement (Sumpner), 310.
Ammonium nitrate, polymorphic changes of (Behn), 444.
Ampere-standard balance (B.O.T.) compared with Ayrton-Jones current-weigher (Mather and Smith), 383.
Anderson (T.) Report on the Eruptions of the Soufrière in St. Vincent in 1902, and on a Visit to Montagne Pelée in Martinique. Part II.—The Changes in the Districts and the Subsequent History of the Volcanoes, 281.
Argon and helium, refractive index and dispersion (Burton), 390.
Aston (F. W.) Experiments on a New Cathode Dark Space in Helium and Hydrogen, 45.
Atmosphere, percentage of inactive gases in (Ramsay), 599.
Atmospheric electric potential gradient and earth-air current, measurement of (Wilson), 537.
Ayrton (Hertha) On the Non-periodic or Residual Motion of Water moving in Stationary Waves, 252.
Ayrton (W. E.), Mather (T.), and Smith (F. E.) A New Current Weigher, and a Determination of the Electromotive Force of the Normal Weston Cadmium Cell, 12.

Bakerian Lecture, 1907 (Thorpe), 298.
Ballistics, exterior (No. 2) (Forbes), 140.
Balloons, ascent of meteorological, and temperature of upper air (Mallock), 530.
Behn (U.) On the Polymorphic Changes of Ammonium Nitrate, 444.
Benzene and homologues, absorption spectra of vapour and solution at different temperatures and pressures (Hartley), 162.
Berthelot (P. E. M.) Obituary notice of, iii.
Beta-rays from uranium, scattering by matter (Crowther), 186; —— secondary (McClelland), 501.
Boltzmann (L.) Obituary notice of, xi.
Brooks (E. E.) The Spectrum of Magnesium and of the so-called Magnesium Hydride, as obtained by Spark Discharges under Reduced Pressure, 218.
Burton (W.) The Refractive Index and Dispersion of Light in Argon and Helium, 390.

Callendar (H. L.) On Vapour Pressure and Osmotic Pressure of Strong Solutions, 466; —— and Dalby (W. E.) On the Measurement of Temperatures in the Cylinder of a Gas Engine, 57.
Cathode dark space in helium and hydrogen (Aston), 45.
Chattaway (F. D.) A Method of Depositing Copper upon Glass from Aqueous Solutions in a thin brilliantly reflecting Film, and thus producing a Copper Mirror, 88.

Chree (C.) Magnetic Declination at Kew Observatory, 1890—1900, 113.
Cookson (B.) A Photographic Determination of the Elements of the Orbits of Jupiter's Satellites, 567.
Copper, annealing of, with reference to dilatation (Turner and Levy), 1 ; —— mirror, produced by depositing copper upon glass from aqueous solutions (Chattaway), 88.
Coronal structure and prominence (Lockyer), 178.
Crookes (Sir W.) On Scandium, 516.
Crowther (J. A.) On the Scattering of the β-rays from Uranium by Matter, 186.
Crystal structure and the dispersion of double refraction (Havelock), 28.
Crystals, intimate structure of, Part VI (Sollas), 267.
Current weigher, a new (Ayrton, Mather, and Smith), 12.
Cuthbertson (C.) and Metcalfe (E. P.) On the Refractive Indices of Gaseous Nitric Oxide, Sulphur Dioxide, and Sulphur Trioxide, 406 ; —— On the Dispersion of Gaseous Mercury, Sulphur, Phosphorus, and Helium, 411

Dalby (W. E.) See Callendar and Dalby.
Darwin (Sir G. H.) Further Consideration of the Stability of the Pear-shaped Figure of a Rotating Mass of Liquid, 166.
Dewar (Sir J.) and Jones (H. O.) Notes on the Application of Low Temperatures to some Chemical Problems : (1) Use of Charcoal in Vapour Density Determination ; (2) Rotatory Power of Organic Substances, 229.
Diamond, conversion into coke by cathode rays (Parsons and Swinton), 184.
Discharge of negative electricity from hot platinum, effect of hydrogen on (Wilson), 379.
Dispersion of mercury, sulphur, phosphorus, and helium (Cuthbertson and Metcalfe), 411.
Drysdale (C. V.) On Luminous Efficiency and the Mechanical Equivalent of Light, 19.
Dupré (A.) Obituary notice of, xiv.

Ear, sensibility to direction of explosive sounds (Mallock), 110.
Earth's surface, represented by means of spherical harmonics (Love), 553.
Electric discharge in monatomic gases (Soddy and Mackenzie), 92.
Electrical resistance of moving matter (Trouton and Rankine), 420.

Fawsitt (C. E.) On the Determination of Viscosity at High Temperatures, 290.
Flow of air through a pipe, frictional resistances to (Grindley and Gibson), 114.
Forbes (G.) Exterior Ballistics (No. 2), 140.

Gas-engine cylinder, measurement of temperatures in (Callendar and Dalby), 57.
Gibson (A. H.) See Grindley and Gibson.
Gold (E.) The Relation between Wind Velocity at 1000 Metres Altitude and the Surface Pressure Distribution, 436.
Greaves (R. H.) See Perman and Greaves.
Grindley (J. H.) and Gibson (A. H.) On the Frictional Resistances to the Flow of Air through a Pipe, 114.

Hartley (W. N.) The Absorption Spectra of the Vapours of Benzene and its Homologues at Different Temperatures and Pressures, and likewise of Solutions of Benzene, 162.
Havelock (T. H.) The Dispersion of Double Refraction in Relation to Crystal Structure, 28.
Helium and radio-activity in minerals (Strutt), 572.
Herschel (A. S.) Obituary notice of, xix.
Hysteresis loss in iron alloys under very small magnetic forces (Wilson and others), 548.

Invariants, operational, of a binary quantic (MacMahon), 151.
Ions in gases, charges on positive and negative (Townsend), 207.

Jerusalem (G.) and Pope (W. J.) The Relation between the Crystalline Form and the Chemical Constitution of the Picryl Derivatives, 557.
Jervis-Smith (F. J.) On the Generation of a Luminous Glow in an Exhausted Receiver moving near an Electrostatic Field, and the Action of a Magnetic Field on the Glow so produced, 212.
Jet-vibration method of investigating surface-tension of liquids (Pedersen), 26.
Jones (H. O.) See Dewar and Jones.
Jupiter's satellites, photographic determination of elements of orbits of (Cookson), 567.

Kinetic stability (Lamb), 168.

Lamb (H.) On Kinetic Stability, 168.
Lees (C. H.) The Effects of Temperature and Pressure on the Thermal Conductivities of Solids. Part II.—The Effect of Low Temperatures on the Thermal Conductivities of Pure Metals and Alloys, 143.
Levy (D. M.) See Turner and Levy.
Light, dispersion in argon and helium (Burton), 390; —— mechanical equivalent of, and luminous efficiency (Drysdale), 19.
Liquid, rotating, stability of pear-shaped figure of (Darwin), 166.
Lockyer (Sir N.) On the Presence of Sulphur in some of the Hotter Stars, 50; —— on the Observations of Sun and Stars made in some British Stone Circles. Third Note.—The Aberdeenshire Circles, 285.
Lockyer (W. J. S.) Prominence and Coronal Structure, 178.
Love (A. E. H.) Note on the Representation of the Earth's Surface by means of Spherical Harmonics of the First Three Degrees, 553.
Lowry (T. M.) See Smith, Mather, and Lowry.
Luminous glow in exhausted receiver near an electrostatic field, and action of magnetic field on (Jervis-Smith), 212.

McClelland (J. A.) Secondary β-rays, 501.
McClintock (Sir L.) Obituary notice of, xxiii.
Mackenzie (T. D.) See Soddy and Mackenzie.
MacMahon (P. A.) Preliminary Note on the Operational Invariants of a Binary Quantic, 151.
Magnesium and magnesium hydride, spectrum of, in spark discharges (Brooks), 218.
Magnetic declination at Kew Observatory, 1890—1900 (Chree), 113.
Magnetism, diurnal variation of terrestrial (Schuster), 80.
Mallet (J. W.) Results of the Interaction of Mercury with Alloys of other Metals, 83.
Mallock (A.) Note on the Sensibility of the Ear to the Direction of Explosive Sounds, 110; —— Note on the Trajectories of Rifled Projectiles with Various Shapes of Head, 519; —— Note on the Ascent of Meteorological Balloons and the Temperature of the Upper Air, 530; —— Effect of a Cross Wind on Rifled Projectiles, 595.
Mather (T.) and Smith (F. E.) Comparison of the Board of Trade Ampere-standard Balance with the Ayrton-Jones Current-weigher; with an Appendix on the Electromotive Forces of Standard Cells, 383. See also Ayrton, Mather, and Smith, and Smith, Mather, and Lowry.
Medals, award of, for 1907, 246.
Mercury, interaction with alloys of other metals (Mallet), 83.

Metcalfe (E. P.) See Cuthbertson and Metcalfe.
Moissan (H.) Obituary notice of, xxx.
Moore, (R. B.) On the Decay of the Radium Emanation when dissolved in Water, 597.
Myers (C. S.) and Wilson (H. A.) On the Perception of the Direction of Sound, 260.

Obituary notices of Fellows deceased, i; Berthelot, iii; Boltzmann, xi; Dupré, xiv; Herschel, xix; McClintock, xxiii; Moissan, xxx; Perkin, xxxviii; Russell, lx.
O'Dell (G. F.) See Wilson, Ernest.
Osmotic pressure of solutions (Porter), 457; (Callendar), 466.
Ozone, decomposition by heat (Perman and Greaves), 353.

Parsons (Hon. C. A.) and Swinton (A. A. C.) The Conversion of Diamond into Coke in High Vacuum by Cathode Rays, 184.
Pear-shaped figure of rotating liquid (Darwin), 166.
Pedersen (P. O.) On the Surface-tension of Liquids investigated by the Method of Jet Vibration, 26.
Perkin (Sir W. H.) Obituary notice of, xxxviii.
Perman (E. P.) and Greaves (R. H.) The Decomposition of Ozone by Heat, 353.
Picryl derivatives, relation between crystalline form and chemical constitution (Jerusalem and Pope), 557.
Polymorphic changes of ammonium nitrate (Behn), 444.
Pope (W. J.) See Jerusalem and Pope.
Porter (A. W.) On the Osmotic Pressure of Compressible Solutions of any Degree of Concentration. Part II.—Cases in which both Solvent and Solute are Volatile, 457.
Projectiles, effect of cross wind on rifled (Mallock), 595.

Quantic, operational invariants of binary (MacMahon), 151.

Radio-activity and helium in minerals (Strutt), 572.
Radium, atomic weight of (Thorpe), 298; —— emanation, decay of, in water (Moore), 597.
Ramsay (Sir W.) Percentage of the Inactive Gases in the Atmosphere: a Correction to Previous Calculations, 599.
Rankine (A. O.) See Trouton and Rankine.
Rayleigh (Lord) Presidential Address, November 30, 1907, 239.
Refraction, dispersion of double, and crystal structure (Havelock), 28.
Refractive index of argon and helium (Burton), 390; —— of nitric oxide, sulphur dioxide and trioxide (Cuthbertson and Metcalfe), 406.
Rotatory power of organic substances (Dewar and Jones), 235.
Russell (H. C.) Obituary notice of, lx.

St. Vincent and Martinique eruptions of 1902—changes in the districts and subsequent history of volcanoes (Anderson), 281.
Scandium, on (Crookes), 516.
Schuster, A. The Diurnal Variation of Terrestrial Magnetism, 80.
Self-induction in an iron cylinder traversed by alternating currents, effects of (Wilson), 369.
Smith (F. E.) On the Normal Weston Cadmium Cell, 75; —— Mather (T.) and Lowry (T. M.) The Silver Voltameter, 77; —— See also Ayrton, Mather, and Smith, and Mather and Smith.
Soddy (F.) and Mackenzie (T. D). The Electric Discharge in Monatomic Gases, 92.
Sollas (W. J.) On the Intimate Structure of Crystals. Part VI.—Titanic Oxide, its Polymorphs and Isomorphs, 267.

Solutions, osmotic pressure of (Porter), 457 ; (Callendar), 466.
Sound, the perception of direction of (Myers and Wilson), 260.
Stone circles, Aberdeenshire, observations of sun and stars made in (Lockyer), 285.
Strutt (Hon. R. J.) Note on the Association of Helium and Thorium in Minerals, 56 ; —— Helium and Radio-activity in Rare and Common Minerals, 572.
Sulphur in some hotter stars (Lockyer), 50.
Sumpner (W. E.) Alternate Current Measurement, 310.
Surface-tension of liquids and method of jet vibration (Pedersen), 26.
Swinton (A. A. C.) See Parsons and Swinton.

Thermal conductivities of solids, effects of temperature and pressure on.—Part II (Lees), 143.
Thorpe (T. E.) Bakerian Lecture for 1907.—On the Atomic Weight of Radium, 298.
Titanic oxide, intimate structure of its crystalline forms (Sollas), 267.
Townsend (J. S.) The Charges on Positive and Negative Ions in Gases, 207.
Trajectories of rifled projectiles with various shapes of head (Mallock), 519.
Trouton (F. T.) and Rankine (A. O.) On the Electrical Resistance of Moving Matter, 420.
Turner (T.) and Levy (D. M.) The Annealing of Copper : with Special Reference to Dilatation, 1.

Uranium β-rays, scattering by matter (Crowther), 186.

Vapour density determination, use of charcoal at low temperatures in (Dewar and Jones), 229.
Viscosity determinations at high temperatures (Fawsitt), 290.
Voltameter, the silver (Smith, Mather, and Lowry), 77.

Water-colour pigments, action of ozone on (Abney), 146.
Waves, stationary, non-periodic motion of water moving in (Ayrton), 252.
Weston cadmium cell, determination of E.M.F. of (Ayrton, Mather, and Smith), 12 ; —— on the normal (Smith), 75.
Wilson (C. T. R.) On the Measurement of the Atmospheric Electric Potential Gradient and the Earth-Air Current, 537.
Wilson (Ernest) Effects of Self-induction in an Iron Cylinder when traversed by Alternating Currents, 369 ; —— Winson (V. H.) and O'Dell (G. F.) On the Hysteresis Loss and other Properties of Iron Alloys under very Small Magnetic Forces, 548.
Wilson (H. A.) The Effect of Hydrogen on the Discharge of Negative Electricity from Hot Platinum, 379 ; —— See also Myers and Wilson.
Wind velocity at 1000 metres and surface-pressure distribution (Gold), 436.
Winson (V. H.) See Wilson, Ernest.

END OF THE EIGHTIETH VOLUME (SERIES A).

HARRISON AND SONS, Printers in Ordinary to His Majesty, St. Martin's Lane.